

State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Engineering Division
Honolulu, Hawaii 96813

June 9, 2011

Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

**APPLICATION FOR A DLNR DAM SAFETY CONSTRUCTION/ALTERATION PERMIT
PERMIT NO. 51 – AAHOAKA RESERVOIR (KA-0063)
DAM ALTERATION AND REMOVAL, WAILUA, KAUAI, HAWAII**

The Engineering Division hereby submits an application for your approval and authorization for the Chairperson and Department to stipulate conditions and issue a Dam Safety Construction/Alteration Permit for the subject application, "Alteration and removal of the AAHOAKA RESERVOIR", pursuant to Chapter 179D Hawaii Revised Statutes.

APPLICANT:

Mr. Ernest Y.W. Lau
Public Works Division Administrator
State of Hawaii
Department of Accounting and General Services
1151 Punchbowl Street, Room 426
Honolulu, HI 96813

LANDOWNER:

Russell Y. Tsuji, Administrator
State of Hawaii
Department of Land and Natural Resources
Land Division
1151 Punchbowl Street, Room 220
Honolulu, HI 96813
TMK: (4) 3-9-002:001

SUMMARY OF REQUEST:

Application for a Dam Safety Construction/Alteration Permit for the alteration and removal of the Aahoaka Reservoir, Wailua, Kauai, Hawaii, see Exhibit 1.

LOCATION: Wailua, Kauai, Hawaii, TMK: (4) 3-9-002:001. See Exhibit 2.

BACKGROUND:

The Aahoaka Reservoir is believed to have been constructed around 1910 to supply irrigation water to nearby fields. The reservoir is currently being used by a lessee from the state to irrigate agriculture fields.

The Aahoaka Reservoir Dam is approximately 36-ft. high, 550-ft. long. The dam crest is about 25-ft wide and serves as internal road on the property. The surface area of the reservoir at the dam crest is approximately 38.4 acres. The reservoir impounds a maximum of 217.8 ac-ft. The existing spillway is a low spot on the left abutment, which is a bare earth road. The dam is equipped with an outlet works near the right abutment, however only the location of the downstream outlet invert is known. The upstream elevation and location are unknown. The reservoir also has another potential outlet on the left side of the reservoir that may lead to a ditch/tunnel system that feeds the Lower Aahoaka Reservoir, but there is little known about the system and even if it is still operational. The dam has a size classification of "small" and hazard potential classification of "high".

A 2009 Phase I Visual Inspection Report by Kleinfelder West, Inc. identified that the dam is covered with excessive vegetation and on the upstream and downstream slopes. There is inadequate capacity in the spillway and there is no functional outlet.

An application for the alteration and removal of the Aahoaka Reservoir was filed on October 5, 2010 by the State of Hawaii, Department of Accounting and General Services (DAGS), on behalf of the owner, the State of Hawaii, Department of Land and Natural Resources (DLNR).

PROJECT DESCRIPTION:

The owner is proposing to remove all the vegetation on the entire embankment, construct a six barrel 9-ft wide by 9-ft high reinforced concrete box culvert spillway. The box culvert is necessary as the dam crest serves as an access road through the property. Additionally the project will either locate the existing outlet works and rehabilitate the outlet, or abandon the existing outlet and install a new outlet structure. The project also will include installation of a staff gage and survey monuments. See Exhibit 3.

The completion of this alteration will result in lowering the effective height and volume capacity of the dam such that it will fall below the jurisdictional size definition of a state regulated dam, pursuant to Chapter 179D Hawaii Revised Statutes.

CHAPTER 343 – ENVIRONMENTAL ASSESSMENT:

In accordance with the Division of Land Management's Environmental Impact Statement Exemption List, approved by the Environmental Council dated April 28, 1986, the subject request is considered exempt from the preparation of an environmental assessment pursuant to Exemption Class No. 1 that states: "Operations, repairs or maintenance of existing structures, facilities, equipment or topographical features, involving negligible or no expansion or change of use beyond that previously existing." See Exhibit 4.

REMARKS:

The applicant (DAGS) and their client, DLNR-Land Division and the applicant's consultant, GEI Consultants, Inc., have completed a basis of design, plans and specifications and requests for the approval of a dam safety construction/alteration permit. The Department and its engineering consultant, Kleinfelder, Inc. have reviewed the documents and concluded that it is sufficient for its intended purposes, (see Exhibit 5). Staff recommends approval of this permit application with the Dam Safety Permit General Conditions (see Exhibit 6) and additional Special Conditions listed below:

SPECIAL CONDITIONS:

1. Provide adequate evidence that revisions to the original construction drawings and specifications that were submitted and approved by DLNR and reviewed by their consultant, Kleinfelder West, Inc. have been incorporated into the construction work (such as in the form of approved change orders or shop drawings).

RECOMMENDATION:

That the Board:

1. Authorize the approval and issuance of the Dam Safety Construction/Alteration Permit for this project; and
2. Direct the Chairperson to issue a dam safety permit for the remediation of the Aahoaka Reservoir (DLNR Dam Safety Construction/Alteration Permit No. 51) subject to such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State.
3. Authorize the Department to oversee the permitted work and take appropriate action including but not limited to selecting and procuring testing or professional services to verify construction work, approval of minor revisions and changes, issuance of fines and /or revocation of the permit, if necessary.
4. Authorize the Department to remove this dam from dam safety regulatory oversight and the requirements of Chapter 179D, Hawaii Revised Statutes, upon satisfactory completion of the construction project.

Respectfully submitted,



CARTY S. CHANG
Chief Engineer

APPROVED FOR SUBMITTAL:



WILLIAM J. AILA, JR.
Chairperson

- Exhibit(s):
- 1 Owner Permit Application
 - 2 Location map
 - 3 Partial Construction Drawing set
 - 4 DAGS Right-of-Entry, including Environmental assessment exemption justification (Chapter 343 HRS)
 - 5 Kleinfelder, Inc. correspondence on approval of plans
 - 6 Dam Safety Permit General Conditions

State of Hawaii
BOARD OF LAND AND NATURAL RESOURCES
 Department of Land and Natural Resources
 Engineering Division

**APPLICATION FOR APPROVAL OF PLANS AND SPECIFICATIONS FOR CONSTRUCTION,
 ENLARGEMENT, REPAIR, ALTERATION, OR REMOVAL OF A DAM**

Date of Application: October 5th, 2010

Applicant: _____ Department of Accounting &
 Contact Name: Ernest Y. W. Lau Firm / Company: General Services (DAGS), State of Hawaii

Mailing Address 1151 Punchbowl Street, Room 426, Honolulu, HI 96813

Telephone: 808-586-0526 Fax: 808-586-0521 Email: ernest.y.lau@hawaii.gov

The Applicant hereby applies to the Board of Land and Natural Resources for the approval of the attached plans and specification for the Aahoaka Dam Safety Improvements (construction, etc.) in accordance with Chapter 179D HRS (as amended by Act 262, SLH 2006), and subject to the provisions, conditions, and limitations of the current Hawaii Administrative Rules and various DLNR dam safety guidelines.

Accompanying this application are:

(please check)

- | | |
|---|-------------------------------------|
| 1. Filing fee (\$25.00) (Waived for government agencies) | <input type="checkbox"/> Waived |
| 2. Three (3) copies of the Detailed Cost Estimate | <input checked="" type="checkbox"/> |
| 3. Three (3) copies of the Final Design Report | <input checked="" type="checkbox"/> |
| 4. Three (3) copies of the Plans | <input checked="" type="checkbox"/> |
| 5. Three (3) copies of the Specifications | <input checked="" type="checkbox"/> |
| 6. Proposed Construction Schedule | <input checked="" type="checkbox"/> |
| 7. Supporting documents:
<u>Three (3) copies of the Emergency Action Plan for Construction</u> | <input checked="" type="checkbox"/> |
| <u>Three (3) copies of the letters of exemption</u> | <input checked="" type="checkbox"/> |

NAME OF STRUCTURE: Aahoaka Dam

DAM OR RESERVOIR LOCATION: Kapa'a, Kaua'i County

Island: Kaua'i Tax Map Key: (4) 3-9-002:001

Attach USGS topographic map (scale 1" = 2000') and property tax map (showing location access to site, proposed work)

State Land Use District: Agriculture Urban Rural Conservation

BRIEF DESCRIPTION OF WORK TO BE PERFORMED

Vegetation clearing, new box culvert spillway (with rock slope protection).

New low level outlet (pipeline & new intake structure with rock slope protection).

Remove the dam from jurisdiction.

Exhibit 1

TECHNICAL INFORMATION:

DLNR-Dam Safety-Sheet 2

1. Drainage Area 0.74 sq. miles or 474 acres
2. Classification of Dam Dam size: SMALL, Hazard Classification: HIGH
3. Type of Structure Earthen embankment
4. Elevation-Area-Capacity Data:

	Elevation	Surface Area (acres)	Total Storage Volume (acre-feet)
Natural Streambed	-408'	N/A	N/A
Primary Spillway	-444'	N/A	N/A
Secondary Spillway	N/A	N/A	N/A
Top of Dam	-466'	N/A	N/A
Design Water Level	-443'	N/A	184
Invert of Drain	<u>Upstream not available</u>		
5. Spillway Details (Type, Dimensions, Material)

Primary:	<u>Overflow at low spot in roadway at left abutment; downstream chute is an unlined earthen channel with a slope of -0.07%</u>
Secondary:	
6. Purpose of Structure Agricultural water supply.
(water supply, irrigation, recreation, real estate development, etc.)
7. Attach rainfall and stream flow records, and flood-flow records and estimates (as accurately as may be readily obtained) See section 2.2 of Design Memorandum - Pertinent Data, Table 2.1:
Median annual rainfall is 97 inches.

ADDITIONAL INFORMATION

1. Primary Owner Contact (if different from applicant) Russell Y. Tsui, Administrator
Owner Company or Entity: DLNR - Land Division
Mailing Address 1151 Punchbowl St. Room 220, Honolulu, HI 96813
Telephone: 808-587-0422 Fax: 808-587-0455 Email: dlnr.land@hawaii.gov
2. Registered Hawaii Professional Engineer who prepared the plan GEI Consultants, Inc.
Steve Verigin
Mailing Address 10860 Gold Center Drive, Suite 350, Rancho Cordova, CA 95670
Registration No. 13646-CE
Telephone: 916-631-4574 Fax: 916-631-4501 Email: sverigin@geiconsultants.com
3. Registered Professional Engineer to be responsible for inspection during construction
Steve Verigin, GEI Consultants Inc.
4. Contractor (If known) Unknown at this time
Mailing Address _____
Telephone: _____ Fax: _____ Email: _____
5. List all other permits applications submitted to other governmental agencies:
Pending submittal by Contractor: DOH - Community Noise Permit
NPDES (Form C & G). Submitted: 404 to USACE (AG exemption), SCAP (not required).
6. Anticipated effect of proposed structure on natural environment: Modifications to existing spillway will require some vegetation clearing, excavation and placement of concrete.
Impact to natural environment will be ephemeral.

Exhibit 1

1. List all other parties that have ownership or other interest on the parcels where the dam and reservoir are located and identify their interest in the property. The Owners herein listed below concur with the work proposed within this application by the applicant and by his/her signing hereto, the owner of the land extends to the Board of Land and Natural Resources, and its designated representatives, a right-of-entry onto the project site to conduct any investigations or inspections required in compliance with the provisions of Chapter 13-190, Hawaii Administrative Rules. (Submit additional copies of this sheet should there be more owners)

<i>Paul J Conn</i>	<u>1151 Punchbowl St., #220; Honolulu, HI 96813; Owner</u> (Address / Interest in Dam or Reservoir)
<u>fr</u> (Signature of Owner) Chairperson	
_____ (Signature of Owner)	(Address / Interest in Dam or Reservoir)
_____ (Signature of Owner)	(Address / Interest in Dam or Reservoir)
_____ (Signature of Owner)	(Address / Interest in Dam or Reservoir)
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_____ (Signature of Owner)	(Address / Interest in Dam or Reservoir)
_____ (Signature of Owner)	(Address / Interest in Dam or Reservoir)

I, Ernest Y. W. Lau the applicant, hereby certify that the information herein is true and factual to the best of my knowledge. Signing below indicates that the applicant understands that, if the permit requested is granted by the Board of Land and Natural Resources, the proposed work is to be initiated and completed within two (2) years of the approval date, unless specifically permitted in the approved permit terms and conditions.

Ernest Y. W. Lau Administrator
(Signature of Applicant & Title)
Public Works Division Administrator
Dept. of Accounting and General Services

Date: 11/10/10

Exhibit 1

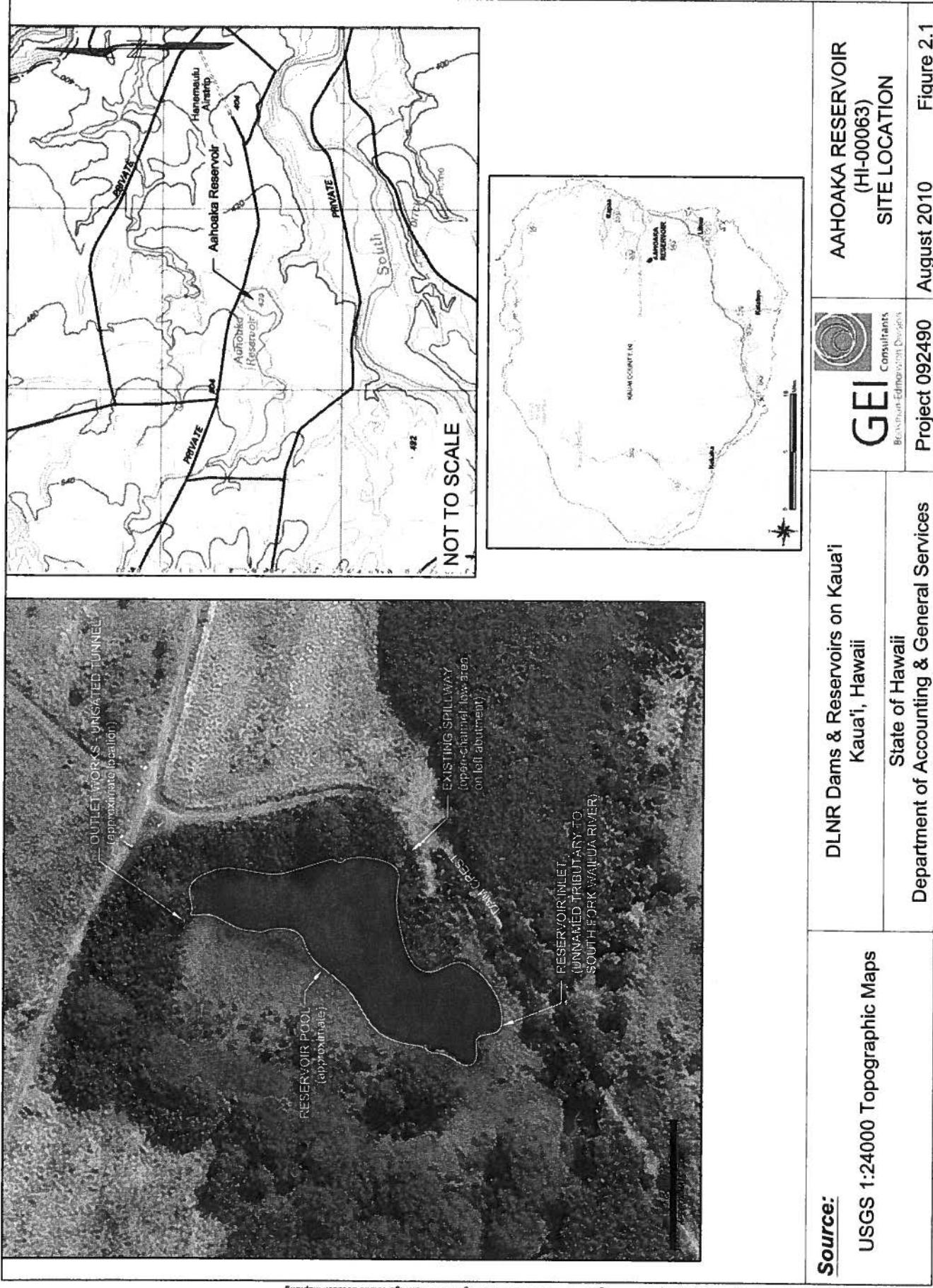


Exhibit 2

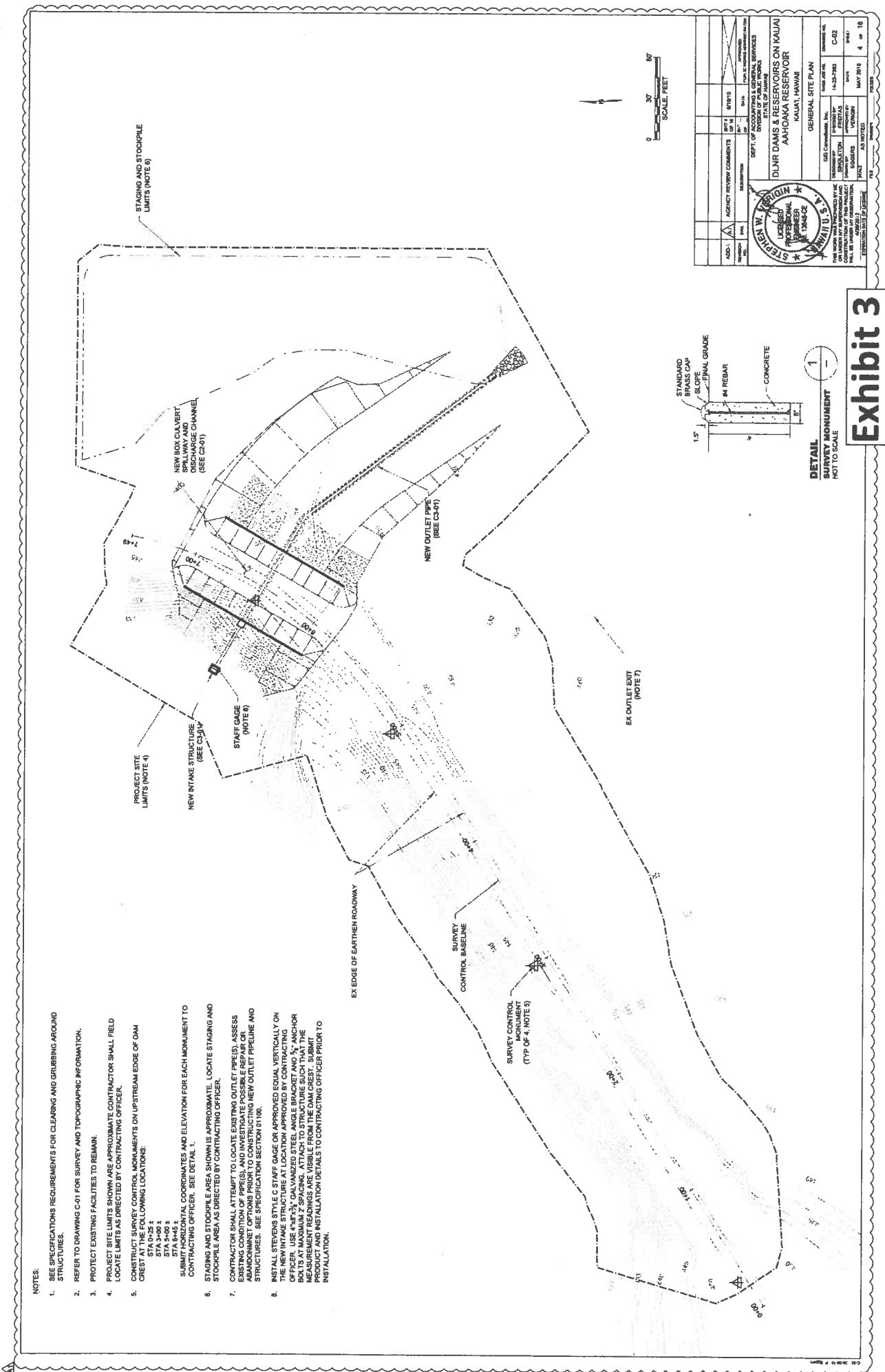


Exhibit 3

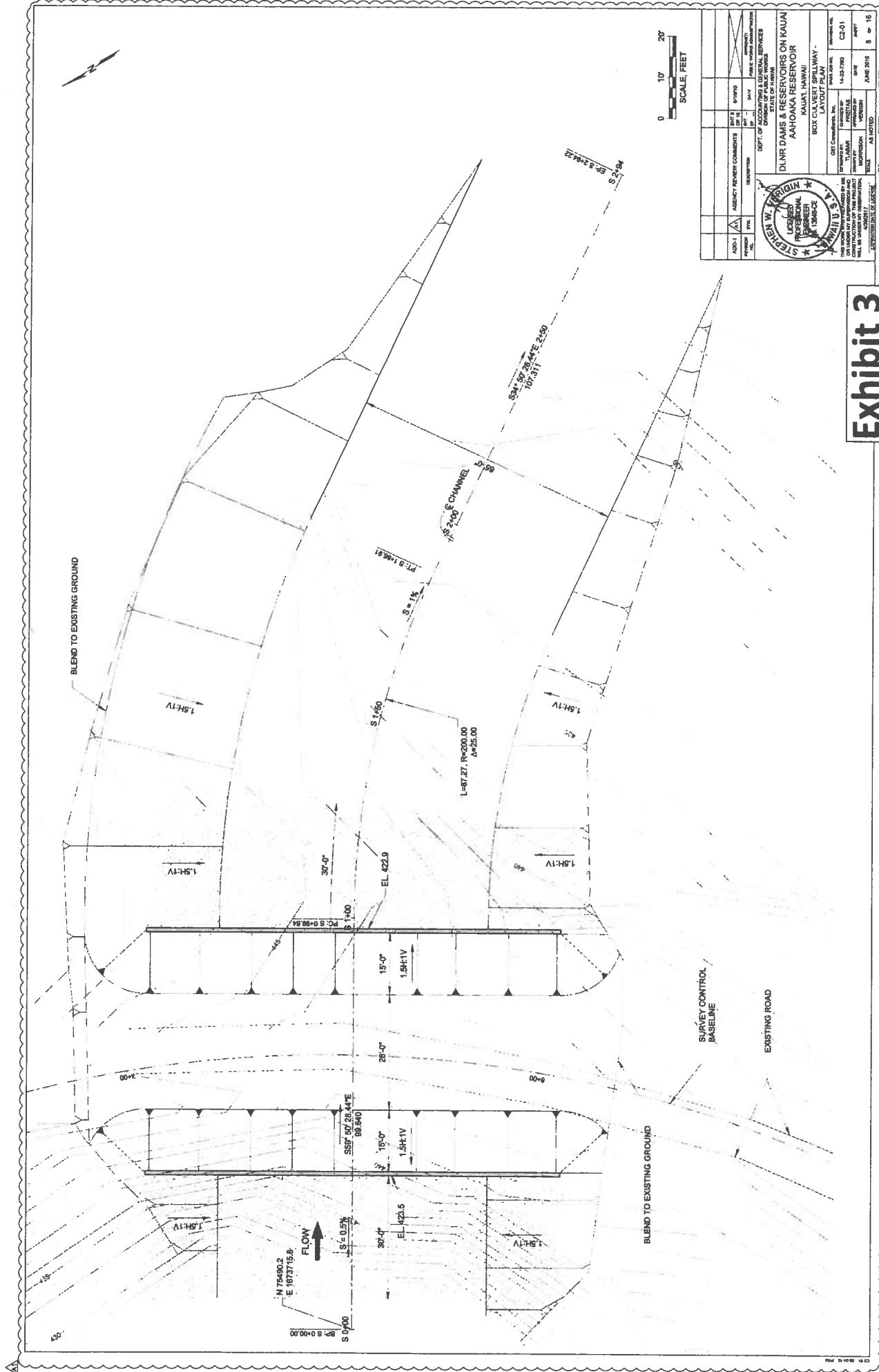


Exhibit 3

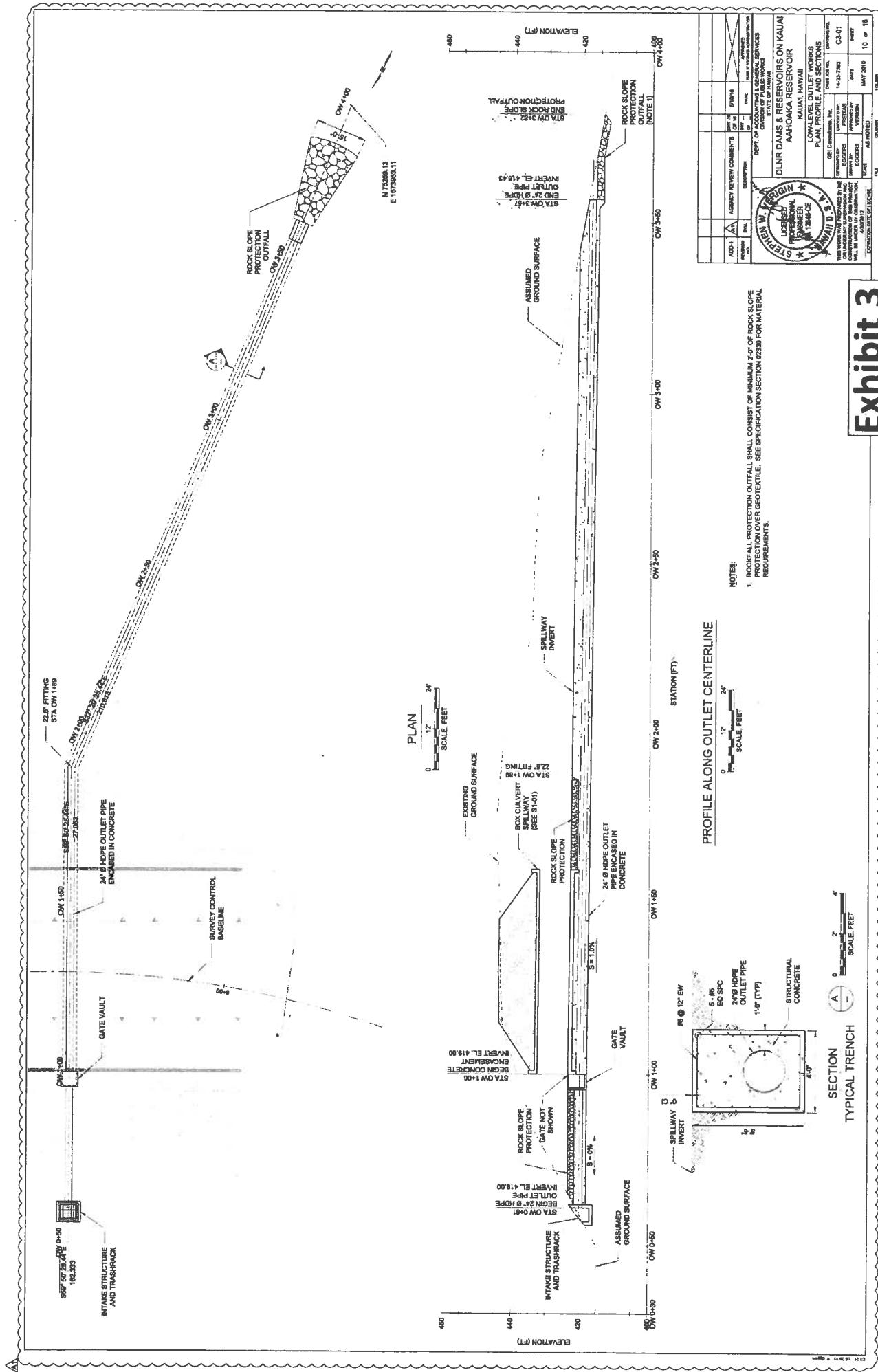
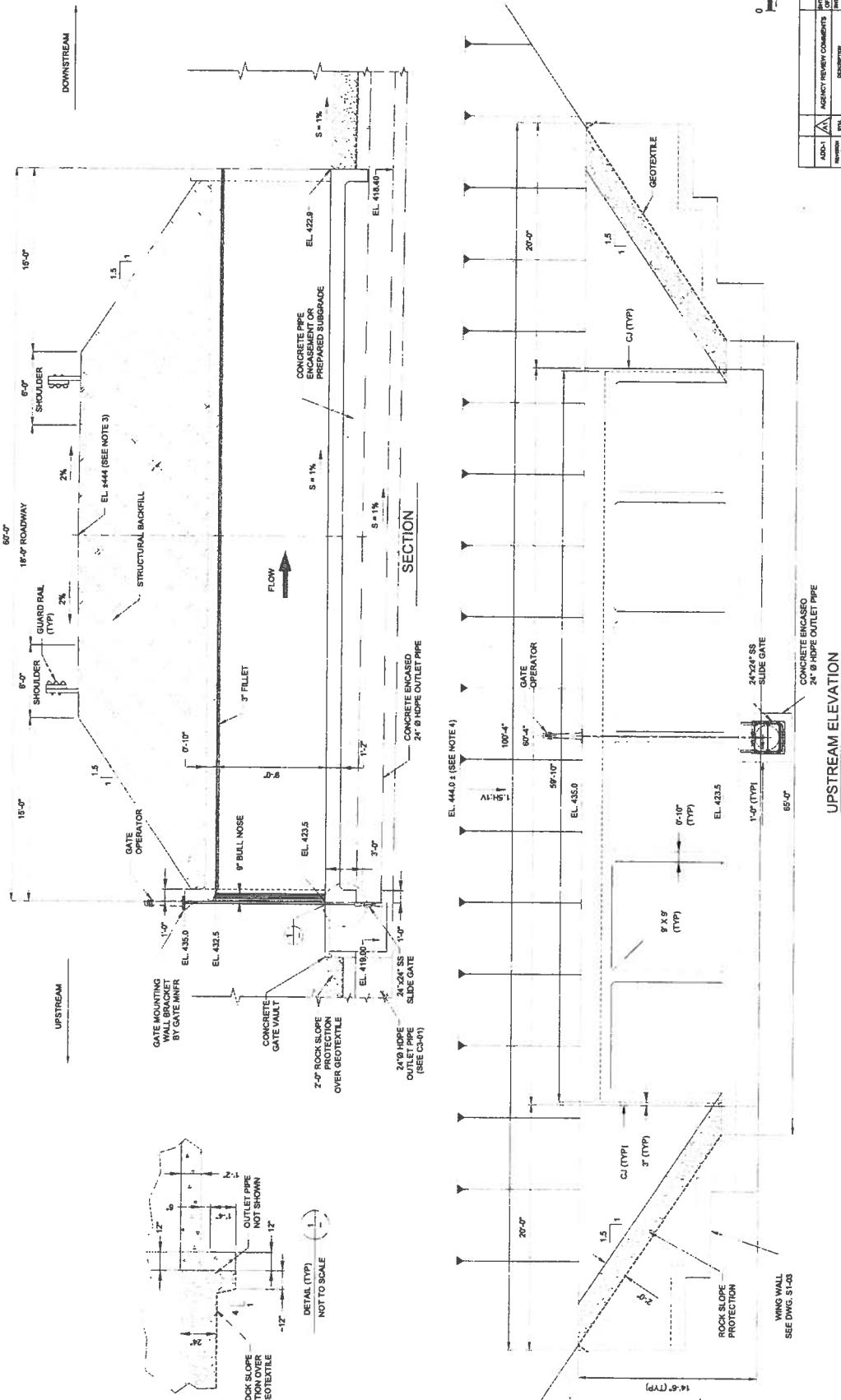


Exhibit 3



ADD1	AGENCY/ENTITY COMMENTS	Part of	ENVNO
REB#	REF	Permit	Permit
DEPT. OF AGRICULTURE, HAWAII STATE OF HAWAII		Permit	Permit
DLNR DAMS & RESERVOIRS ON KAUAI AAHOKA RESERVOIR KAUAI, HAWAII			
BOX CULVERT SPILLWAY - PLAN, ELEVATION, AND SECTIONS			
OCEANIC CONTRACTORS INC. STATE OF HAWAII			
DEPT. OF AGRICULTURE, HAWAII STATE OF HAWAII			
PERMIT NUMBER: 14-237700			
PERMIT DATE: JUNE 2016			
EXPIRATION DATE: JUNE 2017			
APPROVED BY: [Signature]			
ALL NOTED			
PERMIT ISSUED: [Signature]			

D-1
AMENDED

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Honolulu, Hawaii 96813

September 22, 2010

Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Kauai

Issuance of a Right-of-Entry Permit to the Department of Accounting and General Services on State Encumbered Lands, Dams and Reservoirs on Kauai; Dam Maintenance and Remediation Improvements for Aahoaka, Hanamaulu Field 21, Wailua, Upper Kapahi and Lower Kapahi Dams and Reservoirs, in Wailua, Kapaia, and Kapahi, Kauai; Tax Map Keys: (4) 3-9-2:1, 20; 4-2-1:4, 5, 8; 4-6-7:11; 4-4-4:4; 4-6-6:7; 4-6-32:22

APPLICANT:

Department of Accounting and General Services (D.A.G.S.), whose business and mailing address is: 1151 Punchbowl Street; Honolulu, Hawaii 96813, on behalf of the Department of Land and Natural Resources (DLNR).

LEGAL REFERENCE:

Section 171-55, Hawaii Revised Statutes, as amended.

LOCATION:

Portions of Government lands, Dams and Reservoirs on Kauai; Dam Maintenance and Remediation Improvements for Aahoaka, Hanamaulu Field 21, Wailua, Upper Kapahi and Lower Kapahi Dams and Reservoirs, in Wailua, Kapaia, and Kapahi, Kauai; Tax Map Keys: (4) 3-9-2:1, 20; 4-2-1:4, 5, 8; 4-4-4:4; 4-6-7:11; 4-6-6:7; 4-6-32:22, as shown on the attached maps labeled Exhibit A.

AREA:

5,656.77 acres, more or less

ZONING:

State Land Use District: Agriculture
County of Kauai CZO: Agriculture / Open

Exhibit 4

TRUST LAND STATUS:

Section 5(B) lands of the Hawaii Admission Act

As Amended

APPROVED BY THE BOARD OF
LAND AND NATURAL RESOURCES
AT ITS MEETING HELD ON

September 22, 2010

D-1

DHHL 30% entitlement lands pursuant to the Hawaii State Constitution:
YES X NO _____

CURRENT USE STATUS:

Tax Map Key	Document	Tenant	Purpose
3-9-02:1; 02:20	GEO 4328*	Agribusiness Development Corp.	Agriculture and related purposes
4-2 and 4-6	RP 7310	East Kauai Water Users Cooperative ("EKWUC")	Operation, repair and maintenance of irrigation water diversions and transportation infrastructure system including the right to divert, store, take, draw off, conduct away and dispose thereof government owned water from streams and rivers in the drainage area for irrigation purposes.
4-2-1:4	GEO 1389	DOFAW	Public hunting ground & upland game bird reserve
4-2-1; 4-4-4	GL 3911	KIUC	Electrical transmission lines
4-2-1:8	RP 5567	UH College of Tropical Ag	Agricultural experimental purposes
4-4-4:4	GL 5660**	Sanchez, William & Alison	Pasture purposes
4-6-6:7			
4-6-32:22	LOD 28120	Rodrigues, Gary & John	Access & utility easement

*Pending transfer of Revocable Permits to Agribusiness Development Corporation pursuant to Board approval on April 25, 2008, agenda item D-1.

**GL 5660 covers multiple parcels.

CHARACTER OF USE:

Capital Improvement purposes.

TERM OF RIGHT-OF-ENTRY:

Two (2) years.

CONSIDERATION:

Gratis.

Exhibit 4

CHAPTER 343 – ENVIRONMENTAL ASSESSMENT:

In accordance with the Division of Land Management's Environmental Impact Statement Exemption List, approved by the Environmental Council and dated April 28, 1986, the subject requests are exempt from the preparation of an environmental assessment pursuant to Exemption Class No. 1 and Exemption Class No. 9. Also, in accordance with Hawaii Administrative Rules, Section 11-200-8(a), the subject request is considered to be exempt from the preparation of an environmental assessment pursuant to Exemption Class No. 1. See Exhibit B.

DCCA VERIFICATION:

Government agency; not applicable.

APPLICANT REQUIREMENTS:

Applicant shall be required to:

- 1) Obtain written concurrence from tenants prior to any activity on the subject lands.

REMARKS:

Act 213, SLH 2007, Item K-6, as amended by Act 158, SLH 2008 appropriated \$14,530,000 for the Dam Assessments, Maintenance and Remediation Improvements, Statewide, for the purpose of satisfying the State's obligations under Act 262, the "Hawaii Dam and Reservoir Safety Act of 2007".

Governor's Memorandum, dated December 18, 2008, delegated this funding to D.A.G.S. Since DLNR, through its Engineering Division's Dam Safety Program, is responsible for the inspection and regulation of all of the State's dams and reservoirs, D.A.G.S. Public Works Division was delegated the responsibility for managing the assessment, repair, alteration and/or removal of the dams and reservoirs under the Department's jurisdiction because there appeared to be the potential for a "conflict of interest" for DLNR to also be responsible for the party conducting the actual assessment and remediation of these dams and reservoirs.

Part of this \$14,530,000 funding is to remediate five (5) dams and reservoirs on Kauai: Aahoaka, Hanamaulu Field 21, Wailua, Upper Kapahi and Lower Kapahi Dams and Reservoirs. To complete the design and construction of these capital improvements, the D.A.G.S. is requesting a right-of-entry for two (2) years. See Exhibit C.

Comments were solicited from the Office of Conservation and Coastal Lands and the State Historic Preservation Division, and they had no objections.

Exhibit 4

Staff recommends gratis consideration for the issuance of the requested right-of-entry permit since the applicant is a government agency.

There are no pertinent issues or concerns.

Staff is recommending authorizing the Chairperson to extend the right-of-entry beyond the 2-year term, in the event that D.A.G.S. projects experience unanticipated delays.

RECOMMENDATION:

That the Board, subject to the Applicant fulfilling the Applicant requirements above, authorize the issuance of a right-of-entry permit to the Department of Accounting and General Services covering the subject areas under the terms and conditions cited above, which are by this reference incorporated herein and further subject to the following:

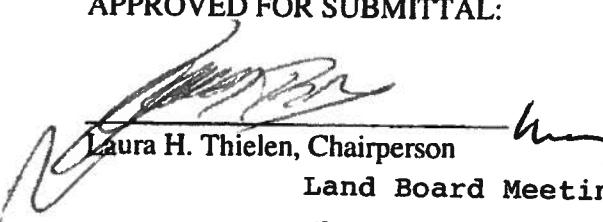
1. The standard terms and conditions of the most current right-of-entry permit form, as may be amended from time to time;
2. Such other terms and conditions as may be prescribed by the Chairperson to best serve the interests of the State; and
3. In the event the projects experience unanticipated delays, authorize the Chairperson to extend the right-of-entry.

Respectfully Submitted,



Lydia M. Morikawa
Special Projects and Development Specialist

APPROVED FOR SUBMITTAL:



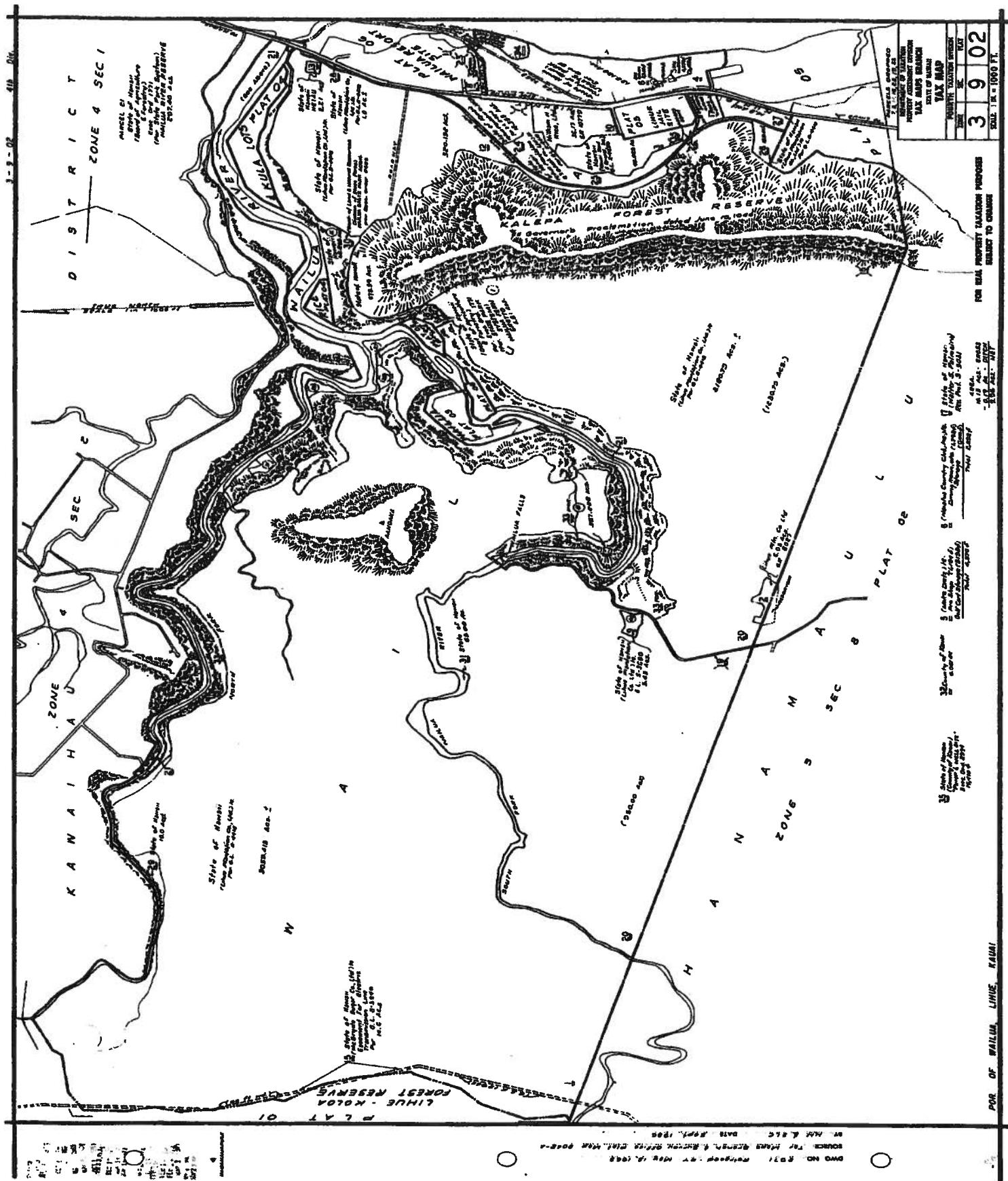
Laura H. Thielen, Chairperson

Land Board Meeting September 22, 2010; D-1

Attachments

The Land Board amended the submittal by: changing the term of the right-of-entry permit from two (2) years to one (1) year, renewable annually as needed. Otherwise, the Land Board Approved staff's recommendations as submitted.

Exhibit 4



LINDA LINGLE
GOVERNOR OF HAWAII



Laura H. Thielen
Chairwoman
BOARD OF LAND AND NATURAL RESOURCES
ESTABLISHED IN WATER RESOURCE MANAGEMENT



**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION**

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 3, 2010

EXEMPTION NOTIFICATION

regarding the preparation of an environmental assessment pursuant to Chapter 343, HRS and Chapter 11-200, HAR

Project Title: DLNR Dams and Reservoirs on Kauai Maintenance and Remediation Improvements

Project / Reference No.: D.A.G.S. Job No. 14-23-7393

Project Location: Aahoaka Dam & Reservoir (State ID #KA-0063)
Wailua, Kauai County, Hawaii
TMK No.: (4) 3-9-002:001

Project Description: Design and repair of the deficiencies of this reservoir – vegetation removal on the upstream slope, crest and downstream slope of the dam, reconstruction of the spillway and installation of a new outlet to meet dam safety requirements - to insure public safety.

Chapter 343 Trigger(s): Use of State funds and on State lands

Exemption Class No. and Description: 1
In accordance with the Division of Land Management's Environmental Impact Statement Exemption List, approved by the Environmental Council and dated April 28, 1986, the subject project is considered to be exempt from the preparation of an environmental assessment pursuant to Exemption Class No. 1, that states: "Operations, repairs or maintenance of existing structures, facilities, equipment or topographical features, involving negligible or no expansion or change of use beyond that previously existing."

The maintenance and improvement project consists of vegetation clearing on the upstream /downstream slopes and

Exhibit 4

Exemption Notification for Aahoaka Dam & Reservoir

September 3, 2010

Page 2

crest of the dam and the spillway, installing a new outlet, and constructing an invert culvert as the new spillway to reduce storage capacity to meet standard dam safety requirements.

The maintenance and improvement project is a single action and not a component or incremental action of a larger total undertaking. There is no cumulative impact as this project will serve to ensure that the Dam will continue to function safely as it has been historically, and it will also be in compliance with the Hawaii Dam Safety Act of 2007. Upon repair, the Dam will serve to maintain a safe environment and simultaneously continue to provide an effective water supply.

**Exempt Item and Description
from Agency Exemption List:**

5

Routine and emergency repair and restoration of existing structures and facilities on State lands involving negligible or no expansion or change or use beyond that previously existing.

Recommendation:

It is recommended that the Board find that this request will probably have minimal or no significant effect on the environment and is presumed to be exempt from the preparation of an environmental assessment.

Laura H. Thielen, Chairperson

Date

Exhibit 4

**STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES**

**ENGINEERING DIVISION
POST OFFICE BOX 373
HONOLULU, HAWAII 96809**

MEMO

To: Carty S. Chang, Chief Engineer

Through: Dickey Lee, Branch Chief
Edwin Matsuda, Flood Control and Dam Safety Section Head

From: Denise Manuel *dm*

Date: May 19, 2011

Subject: Permit 51 – Aahoaka Reservoir – Kleinfelder comments

GEI Consultants, Inc. provided answers to Kleinfelder's comments 26, 27, 28, 29, 34, and 36 on the comment-response document attached. The dam safety staff reviewed the comments and agreed that they satisfy Kleinfelder's concerns. The site conditions will be monitored during construction and any excavation that reveals differing site conditions will be reported to the designer, GEI Consultants, Inc. for review of the design at that time. Additionally, GEI Consultants, Inc. will be reissuing the construction drawings and specifications to make clarifications and corrections noted in the review process. The reissuance of the drawings and specifications will be made and submitted to the Dam Safety Program prior to the start of construction.



611 Corporate Circle,
Suite C
Golden, CO 80401
p 303.237.6601
f 303.237.6602
kleinfelder.com

May 6, 2011

Denise Manuel, P.E.
State of Hawaii
Department of Land and Natural Resources
P.O. Box 373
Honolulu, HI 96809

RE: Permit Review for Aahoaka Reservoir

Dear Denise,

We are providing this letter to state that Kleinfelder has completed a review of the design and construction documents for the modifications to Aahoaka Dam and Reservoir prepared by GEI Consultants, Inc (GEI). These documents consisted of the Design Memorandum, Drawings, Specifications, Opinion of Probable Cost, Construction Emergency Action Plan, Addendum No. 1, HEC-HMS Output dated March 24, 2011, and Spillway Discharge Channel Calculations dated March 24, 2011. Comments were provided to the DLNR and copied to GEI. GEI provided responses to these comments. With the exception of the comments that were accepted by DLNR based on GEI's judgment, GEI has responded to our comments satisfactorily. Comments that were accepted by DLNR based on GEI's judgment are comments 26, 27, 28, 29, 34, 36 on the comment-response document, submitted to the DLNR on April 27th and attached for your use.

We appreciate this opportunity to be of service to you. Please call me at (303) 237-6601 ext. 221 or email llariviere@kleinfelder.com if you have any questions.

Respectfully submitted,

KLEINFELDER WEST, INC.

A handwritten signature in black ink, appearing to read "Laura A. LaRiviere, P.E." followed by "Project Manager".

Laura A. LaRiviere, P.E.
Project Manager

Dam Name: Aahoaka
Dam ID: HI-00063

Dam Safety Permit Comment Response Form

Sheet 1 of 16

PROJECT NAME/DESCRIPTION: AAHOAKA RESERVOIR			DLNR PERMIT NO.
COMMENTS BY: DLNR CONSULTANT - KLEINFELDER		DATE: REVIEW DATE - 01/14/11	
RESPONSE/RESOLUTION BY: OWNER CONSULTANT/REPRESENTATIVE		DATE: RESPONSE DATE - 04/26/2011	
COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
Comments from original Aahoaka Submittal: MAY 2010			
1	General	In general, there are numerous inconsistencies in the Spillway Design Flood Analysis Report and Design Drawings. These should all be resolved prior to the submission of the documents.	No formal response provided. Comment resolved.
2	Spillway Design Flood Analysis Report	Overall, the Spillway Design Flood Analysis Report (Report) needs to be updated to reflect the conditions shown on the Design Drawings. Section 5 of the Report states that culverts will be used to widen the spillway, while the drawings show a widened open channel.	No formal response provided. The report was updated. Comment resolved.
3	Spillway Design Flood Analysis Report	Table 3.1 in the Report is confusing. There are columns for Cases I and II, with no explanation of what Case I or Case II is. If Case I is for Upper Kapahi and Case II is for Aahoaka, then why is assumed that all the flow lengths are the same? Or, if Cases I and II are both for Upper Kapahi, then why are the channel dimensions not known for Case II? Where does the velocity for KKU come from? Also, there is no note or equation given for the travel time for the shallow concentrated flows 1 and 2.	No formal response provided. Notes were added to clarify. Comment resolved.
4	Spillway Design Flood Analysis Report	Table 3.2, where did the channel length come from? Also, please add a note that the USBR equation gives time of concentration in hours that then needs to be converted to minutes. <u>Amended Comment:</u> Channel length was clarified. Please add a note that the USBR equation gives time of concentration in hours that then needs to be converted to minutes.	Agree. Response is reasonable

Dam Name: Aahoaka
Dam ID: HI-00063

**Dam Safety Permit
Comment Response Form**

Sheet 2 of 16

PROJECT NAME/DESCRIPTION: AAHOAKA RESERVOIR			DLNR PERMIT NO.
COMMENTS BY: DLNR CONSULTANT - KLEINFELDER		DATE: REVIEW DATE - 01/14/11	
RESPONSE/RESOLUTION BY: OWNER CONSULTANT/REPRESENTATIVE		DATE: RESPONSE DATE - 04/26/2011	
COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
5	Spillway Design Flood Analysis Report	In Section 3.5, the last sentence of the first paragraph states that "GEI assumed El. 440 ft is at the dam crest," while Section 2.2 gives the dam crest at El. 429 ft. Please clarify and correct based on recent survey.	No formal response provided. Comment resolved.
6	Design Drawings	There are concerns about the placement of the access road at the toe of the dam for a number of reasons: 1. The 2009 Phase I Visual Inspection Report stated that large ponds of seepage were observed at the toe area in a large enough quantity that the lessee could use the water for irrigation. The Design Drawings (Drawings) do not show any plans for seepage mitigation, and the new access road does show that it will have any type of paving or gravel placement to prevent it from becoming muddy and impassible. 2. The spillway will discharge directly onto the new access road. There is no information given on the depths of flow that will be expected over the roadway for any flood situation. And, with no planned paving or reinforcement of the road, what is preventing it from being washed out from spillway flows? If the road washes out or becomes impassible due to spillway flows, is there any way to access the dam embankment or outlet gate controls?	No formal response provided. Road no longer at toe. Comment resolved.

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PROJECT NAME/DESCRIPTION: AAHOAKA RESERVOIR			DLNR PERMIT NO.
COMMENTS BY: DLNR CONSULTANT - KLEINFELDER		DATE: REVIEW DATE – 01/14/11	
RESPONSE/RESOLUTION BY: OWNER CONSULTANT/REPRESENTATIVE		DATE: RESPONSE DATE – 04/26/2011	
COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
7	Design Drawings	<p>There are no calculations or backup given for the new spillway channel width and depth. Also, there is no justification for the 1H:1V spillway side slopes – will these be stable?</p> <p><u>Amended Comment:</u></p> <p>Spillway concept and geometry has changed. Please provide, at a minimum, HMS model output showing that this spillway configuration is adequate.</p>	<p>Requested information is attached. (AA_HEC-HMS Results-8.11.10.pdf)</p>
8	Design Drawings	The access road needs to be shown on Drawings C2-01 and C3-01 on both plan and profile views.	No formal response provided.
9	Design Drawings	There are concerns about the outlet pipe installation under the spillway. Is there any predicted soil loss in the spillway during spillway operation? Will there be any issues if the concrete encasement is exposed?	<p>In discussion with DLNR and DAGS, it was agreed that the preferred approach is to locate and remediate the existing outlet facilities, rather than construct a new outlet. To date, attempts to locate the existing outlet features have been impeded by the heavy vegetation at the site. After the Contractor has cleared the site, we will make further attempts to locate and assess the existing outlet facilities. In any event, the outlet features shown on the drawings are intended to serve as a "placeholder" for general intent and cost.</p> <p>Following final determination of a repair/replacement concept, appropriate modifications will be made to the Contract Documents by Change Order, subject to review and approval by DLNR Dam Safety.</p>

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RESPONSE/RESOLUTION BY: OWNER CONSULTANT/REPRESENTATIVE	DATE: RESPONSE DATE – 04/26/2011		
COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
10	Design Drawings	Due to the issues with the access road stated above, is there any plan for additional reinforcement of the outlet pipe under the road? What is the predicted clearance from the top of the access road to the top of the planned outlet pipe encasement?	No formal response provided. Road alignment changed. Comment no longer applies.
11	Design Drawings	Is there a planned outlet structure for the outlet pipe? None is shown.	Refer to Response to Review Comment No. 9. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.
12	Design Drawings	The two bends in the outlet pipe are cause for concern if debris gets into the outlet pipe. There are no trashrack details provided to specify the max width between bars that will prevent debris that is a size large enough to clog the pipe from getting into the pipe. Also, debris can enter the outlet structure through the grate on the top of the structure. There are no details given on the grate spacing or on how the grate will be removed for access to the intake structure.	No formal response provided. Intake structure changed and trashrack spacing provided. Comment resolved.
13	Design Drawings	Will the pipe stub shown in the outlet structure on Drawing C2-03 be made of HDPE or PVC, and if not, how will the outlet pipe be tied into this stub?	No formal response provided. Outlet structure changed. Comment no longer applies.
14	Design Drawings	Are there any planned provisions for fall protection in the outlet structure?	No formal response provided. Outlet structure changed. Comment no longer applies.

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RESPONSE/RESOLUTION BY: OWNER CONSULTANT/REPRESENTATIVE	DATE: RESPONSE DATE – 04/26/2011		
COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
15	Design Drawings	<p>There are serious concerns about the constructability of the outlet pipe and encasement. There is little room in the trench or on either side of the encasement for the construction workers. It appears that an excavation will be made to the dimensions of the encasement with no room for forms, etc.? Is a filter diaphragm planned for the outlet conduit? How will soil be backfilled around the encasement if the area is overexcavated? What are the anticipated soil conditions under the encasement, and will foundation preparation be necessary to avoid settlement, differential or otherwise, of the pipe and encasement?</p>	<p>Refer to Response to Review Comment No. 9. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.</p>
16	Specifications Specification Sections 02300 (Earthwork), 02650 (Outlet Fiping), 03300 (Cast-in-Place Concrete), and 11280 (Water Control Gates) were briefly reviewed.	<p>In Section 02300, 3.01.A, is the contractor supposed to test the onsite soils for percent fines prior to submitting the dewatering plan, or are you providing soil properties?</p>	<p>The Contractor is required to make his own determination of soil properties for his use in developing his dewatering plan.</p>
17	Specifications	<p>Section 02650, 1.01.A states 12-inch ID, while Sections 2.01.C and 2.02.A state OD.</p>	<p>Refer to Response to Review Comment No. 9. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.</p>

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COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
18	Specifications	Section 02650, 3.04.G talks about a bedding surface for the pipe. Is this bedding meant for the pipe encasement? There is no bedding surface shown on the drawings.	Refer to Response to Review Comment No. 9. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.
19	Specifications	Section 03300, 2.06 and 3.06 talk about waterstops. There are no waterstops shown on the drawings.	Refer to: Dwg S1-02, Sect. B, Dwg S1-03, isometric; Dwg S1-04, Sect. E.
Comments from Design Memorandum: September 8, 2010			
20	Executive Summary	The report states "GEI reviewed existing geological and geotechnical investigations performed at and near the dam, including boring logs and laboratory data,..." Discussion of the investigations at the site are not included in the report, were there any?	To our knowledge, there are no available reports of subsurface investigations or geotechnical data for the Aahoaka Reservoir dam site.
21	Section 2.1, Background	Last paragraph. The description of the outlet works in this paragraph is inconsistent with what is shown on Figure 1. Figure 1 shows the outlet at the upstream end of the reservoir that was identified in the 2009 Phase I report by Kleinfelder. Please be consistent when describing and identifying outlets.	The call-outs for the outlet and inlet are reversed on Figure 2.1; we will correct.
22	Figure 2.1, Site Location	Please show approximate location of outlet at the right abutment.	The call-outs for the outlet and inlet are reversed on Figure 2.1; we will correct.
23	Section 3, Design Criteria	Last sentence before Section 3.1. Please correct reference.	The sentence will be revised to read: "Specific improvement modifications and repairs are described in Section 7."

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RESPONSE/RESOLUTION BY: OWNER CONSULTANT/REPRESENTATIVE		DATE: RESPONSE DATE - 04/26/2011	
COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
24	Section 3.1, Hydrology and Hydraulics	In general, please discuss design and reasoning for proposed outlet works configuration, including why the pipe size was chosen, why there is no outlet structure, and what the expected flow rates and velocities are. Please include calculations and a rating curve.	Refer to Response to Review Comment No. 9. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.
25	Section 3.12, Freeboard Requirements	The second bullet under Residual Freeboard makes reference to Upper Kapahi Reservoir. Is this correct, or should it say Aahoaka Reservoir? Please correct as needed.	The reference should be to Aahoaka. Revised residual freeboard calculations for the 5 project dams were submitted with previous responses to Upper Kapahi Reservoir review comments; the report text will be modified to document the most recent calculations. The residual freeboard criterion of ≥ 3 ft. remains unchanged.

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COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
26	Section 3.3.1, Embankment Design	<p>The section states that one of the minimum criteria in the embankment design is "Seepage through the embankment and its abutments and foundation must be controlled so that piping and sloughing do not occur." Seepage issues, both existing and future, are not addressed in the design.</p>	<p>A primary objective of the project is to remove the dam from state jurisdictional status. To meet the requirements for non-jurisdictional status, the spillway will be significantly lowered. The proposed modifications will result in a maximum normal water pool depth of about 15 ft, with a corresponding storage volume of about 10 AF. The new max. normal water depth is about 45% of the existing depth.</p> <p>The proposed modifications reduce the overall gradient through the embankment from about 0.35 to about 0.1 (Sta. 3+50±). More detailed seepage assessments for project dams having overall gradients of about 0.2 were found to be satisfactory with respect to dam safety. Detailed analyses for Aahoaka would be based on similar soil properties and embankment/foundation conditions. Given that the overall gradient at Aahoaka is much lower, we expect that detailed seepage analyses would demonstrate similar or better performance with respect to dam safety. The seepage performance of the modified Aahoaka embankment is thus judged to be acceptable by inspection.</p>

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COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
27	Section 4, Geological and Geotechnical Evaluation, last paragraph	<p>The paragraph states that the "The need to perform additional field exploration or laboratory testing for the Aahoaka Reservoir was considered." The statement implies that there has been past explorations performed at the site. The results of the past explorations should be included in the report. If no previous explorations were performed, what is the basis of the property correlations?</p>	<p>No additional field explorations or laboratory testing were performed to support the final design of the modifications. From our reconnaissance of the Aahoaka Reservoir site and our review of various geotechnical reports prepared for nearby sites (Upper Kapahi, Lower Kapahi, Wailua, Ka Loko) the embankment and foundation materials at these sites were judged to be within the same "family" of soil conditions. Accordingly, we believe it is appropriate and reasonably conservative to select values for engineering properties using the existing body of laboratory testing and investigation data. Engineering properties for the embankment and foundation soils at Aahoaka are the same as those used at U. Kapahi, and were derived in the same manner.</p>
28	Section 5, Geotechnical Analysis	<p>How was the stratigraphy of the dam determined? The report should provide supporting subsurface data.</p>	<p>Stratigraphy was based on our observations at the site, correlation with other dams sites, and engineering judgement.</p>
29	Section 5.3, Seepage Analysis	<p>Seepage analysis was performed but exit gradients are not discussed. The report should include exit gradient evaluation and resolution of any issues.</p>	<p>Refer to response to Review Comment No. 26, above.</p>
30	Section 5, Geotechnical Analysis	<p>In the first paragraph, the report says Station 3+50 was selected for the analysis and in Table 5.1, results for Station 3+00 are given. Where was the analysis performed?</p>	<p>Analyses were performed for the section at Sta. 3+50. The station reference and dam ID in Table 5.1 will be corrected.</p>

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COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
31	Section 6.5, Proposed Spillway Modifications	The sentence after the bullet for criterion 2 gives the reservoir storage capacity and dam height as about 220 ac-ft and 38 ft, respectively. These values are given more accurately in Section 2.1 and Table 2.1. Please be consistent throughout report. This comment also applies to Appendix C, Section 6.	The referenced values are well within the accuracy of available information. Response is reasonable

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COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
32	Section 6.5, Proposed Spillway Modifications	Was a HEC-RAS analysis performed for the spillway to determine expected velocities in the spillway channel? Will a hydraulic jump occur in the channel? Will the proposed riprap be adequate? Will grass cover be adequate in the downstream portion of the channel?	<p>There were no HEC_RAS analyses performed for the proposed new spillway. Velocities in the downstream spillway channel are estimated to be in the range of 6-9 fps for the peak 100-yr discharge. Natural channel slopes downstream from the spillway are estimated to be in the range of 3 percent or more and the overall channel does not constrict within the vicinity of the spillway channel, so we do not expect the formation of a hydraulic jump in the channel.</p> <p>The grassed channel is expected to provide reasonable channel stability for flow velocities in the range of 6-8 fps (Chow, Table 7-6). In addition, the downstream riprap and concrete box culvert with upstream and downstream cutoffs provide additional protection against potential headcutting in the channel. In consideration of these combined factors, we believe that the potential for failure of the spillway (i.e. breach of the spillway and uncontrolled release of reservoir contents) for floods up to the 100-yr event are very remote. We do recognize, however, that the spillway may incur some damage from significant spillway flows; this potential will be addressed in the updated O&M Manual.</p> <p>(Ref: AA_SpillwayOutfall_18-Mar-2011.pdf, attached.)</p>
33	Table 6.3, Proposed New Spillway Reservoir Routing Results - PMF	It seems like the Residual Freeboard for this case should be 11 feet. This comment also applies to Appendix C, Table 6.2.	Agree; tables will be corrected.

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COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
34	Section 7.1.1 Dam Safety Deficiencies	Why was the seepage observed at the site, as noted in each previous inspection report, determined to not be a dam safety deficiency? What has been done to mitigate existing seepage and prevent future seepage?	Refer to response to Review Comment No. 26, above. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.
35	General and Sheet C3-01	Current state of practice is to include a filter diaphragm or filter collar around any conduit penetrating an embankment (see FEMA's Technical Manual: Conduits through Embankment Dams).	Refer to Response to Review Comment No. 9. See Resolution to Comment No. 9.
36	Appendix C, Section 3.7, Probable Maximum Precipitation	Seepage has been noted in the past at Aahoaka reservoir on the downstream slope. Internal erosion/piping is a potential failure mode and should be considered in the design of the remediation improvements.	HMR 39 does not differentiate between "general storm" (24-hr) and "local storm" (6-hr) precipitation events. Based on our review, the concept of a "local storm" or 6-hr PMP event is not applicable to the Hawaiian islands.
37	Appendix C, Section 7, References	Section 3.7 Was the 6-hour PMP considered in this analysis. Please include language as to why it was or wasn't considered.	GEI's approach addresses the issue and is acceptable based on GEI's judgment.
38	Appendix C, Figure 2, Dam Crest Profile	Please include a reference for HMR 39.	Agree.
39	Appendix C	The stationing on this figure does not match that shown on Drawing C-01. Please correct.	Refer to Response to Review Comment No. 7.
40	Sheet G-01	In title – "DNLR" should be "DLNR"	Noted. Comment will be considered if post-award modifications to this drawing are made for other reasons.

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41	Sheet C-01	Please show approximate limits of existing spillway.	The existing spillway is a low spot in the crest at approximately Sta. 6+00. We will call this feature out if post-award modifications to this drawing are made for other reasons.
42	Sheet C-02	Limits of disturbance should be extended to include the existing outlet exit at the toe of the dam. As shown on Sheet C-03, this area will be disturbed.	Agree. We will formally advise the Contractor of this revision.
43	Sheet C-02	Note 7 states that if the existing outlet pipe is located the Contractor shall assess the condition and investigate possible repair or abandonment options. It is suggested that this language be changed to state that if the existing outlet pipe is located that the Contracting Officer and Engineer be notified, and that the Contracting Officer or Engineer should assess the condition and investigate possible repair or abandonment options.	The intent is for the State and the Engineer to assess the condition of the existing outlet works (if located) and determine the appropriate repair or replacement. We will formally advise the Contractor of this clarification.
44	Sheet C-02	There is no topography provided in the proposed Staging and Stockpile area. Will this area be suitable for this purpose? Also, the limits include part of the proposed spillway and outlet works. Please modify to exclude these areas.	Based on review of available aerial imagery and visual observations at the site, we believe that this general location is feasible.
45	Sheet C-04	The straw bale dike at the existing outlet exit appears to be very large. Is it shown to scale?	It is not drawn to scale. Details of the Straw Bale Dike are shown on Dwg. C-06.
46	Sheet C-06	The scale on this drawing does not apply for most details shown on this drawing. Please use a scale for each detail, or state that the detail is not to scale.	Noted. Comment will be considered if post-award modifications to this drawing are made for other reasons.
47	Sheet C-06	The silt fence detail gives an overall minimum height of 48 inches, but minimum heights for the components total only 42 inches. Please clarify.	The minimum required height will be modified to 42"; we will formally advise the Contractor of this modification.

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48	Sheet C2-02	Please show excavation for outlet pipe.	Refer to Response to Review Comment No. 9. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.
49	Sheet C2-02	Limits and note for excavation of culvert structure and wingwalls does not appear to be adequate. Is the determination of a safe slope left to the Contractor? Please provide proposed excavation limits. Overall this drawing appears to show final grade of the spillway channel as opposed to an actual plan for excavation of proposed facilities other than the channel.	The Contractor is required to submit his proposed excavation plan for review and approval. The Contractor is responsible for all temporary excavations, including determination of safe slopes and/or design of shoring and bracing.
50	Sheet C3-01	As stated in Comment #15 from the previous round of comments, there are serious concerns about the constructability of the outlet pipe and encasement. Will pipe supports be needed for constructability? A dimension at the top of Section A is cutoff and cannot be read.	Refer to Response to Review Comment No. 9. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.
51	Sheet C3-01	In Note 1, "Rockfall protection" should be changed to "Rockslope protection."	Noted. Comment will be considered if post-award modifications to this drawing are made for other reasons.
52	Sheet C3-01	Since actual ground surface at the outlet works discharge point is unknown, stationing for end of outlet pipe and end of rockslope outfall should be labeled as approximate or assumed. Slope on concrete encasement should be labeled as 'slope to match grade' at this location. There are not enough dimensions on the rock slope protection outfall structure to be constructed.	Refer to Response to Review Comment No. 9. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.

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COMMENT NUMBER	REPORT SECTION	COMMENT	RESPONSE
53	Sheet S1-01	Note callouts appear to be incorrect on entire drawing. Please correct.	Agree. We will provide clarification to the Contractor.
54	Sheet S1-01	Detail 1 is confusing. It is called out at the location where the outlet is located under the spillway, but the detail appears to show the culvert structure and rockslope contact at all other locations along the spillway. Please add a note to clarify.	Response is reasonable Response is reasonable
55	Sheet S1-01	The distance from the bottom of the culvert structure to the crown of the outlet pipe appears to increase from the upstream end of the culvert structure to the downstream end of the structure. If the slope of the culvert and pipe are both 1%, wouldn't this distance be constant? The elevation callouts are correct. Please clarify.	Noted. The slope and elevation callouts are correct; the slope of the culvert is drawn at <1%.
56	Sheet S1-01	Please call out the Top of Roadway on the Upstream Elevation.	Agree. Response is reasonable.
57	Sheet S1-01	1.5H:1V slope from the crest to the outlet works control is rather steep. Is there concern of accessing the outlet works during a storm when the slope may be slippery and the spillway flowing?	Refer to Response to Review Comment No. 9. We will fully address this comment as appropriate to support final resolution of outlet works remediation concept.
58	Sheet S1-03	Section C should show final step of wingwall beyond.	Noted. Comment will be considered if post-award modifications to this drawing are made for other reasons.
59	Sheet S2-01	On bottom right detail – please use consistent symbol for waterstop.	Noted. Comment will be considered if post-award modifications to this drawing are made for other reasons.

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60	Specification 02300 Sec. 2.01	Need to add a reference and additional specifications as needed for the 4" Aggregate Road Base as called out in the drawings.	There is no Aggregate Road Base; refer to the Bid Documents as amended by Addendum No. 1. Response is reasonable
61	Specification 02110 Sec. 1.01	Need to add a reference to Section 02254 Temporary Erosion Control	Noted. Comment will be considered if post-award modifications to this specification section are made for other reasons. Response is reasonable

DAM SAFETY PERMIT GENERAL CONDITIONS

APPROVAL OF PLANS AND SPECIFICATIONS FOR DAM AND RESERVOIR CONSTRUCTION, ENLARGEMENT, REPAIR, ALTERATION OR REMOVAL

The following General Conditions shall be adhered to for all Dam Safety permits unless otherwise authorized in writing.

1. Actual construction, enlargement, repair, alteration or removal shall be completed within 5 years of issuance of the permit application approval unless an extension authorized in writing by the Board is issued.
2. Prior to the start of work the owner or applicant shall provide a construction engineer to ensure compliance with the approved plans and specifications and who shall have ultimate responsibility for the supervision of all inspection tasks. The construction engineer may assign some inspection tasks to a duly authorized agent under the construction engineer's supervision. The engineer shall be licensed in the State of Hawaii.
3. The construction engineer shall maintain a record of construction that at a minimum, shall include, daily activity, and progress reports, all test results pertaining to construction; photographs sufficient to provide a record of foundation conditions and various stages of the construction through completion, all geologic information obtained; and construction problems and remedies.
4. A construction quality assurance plan shall be prepared and submitted to the Department for approval prior to the start of construction, which details the minimum requirements of the construction engineer's observation of construction.
5. A construction schedule, which includes the notice to proceed date and estimated project duration and a construction emergency action plan shall be submitted prior to the preconstruction meeting.
6. A preconstruction meeting shall be held subsequent to submitting the quality assurance plan, construction schedule and construction emergency action plan, but not later than 14 days prior to the start of construction. All parties actively involved in the construction should be requested to attend, such as the dam owner, the design engineer, the construction engineer, the contractor and the Department.
7. The Department shall be notified 5 calendar days prior to the commencement of construction.
8. Any changes from the approved plans and specifications shall be approved by the design engineer and a change order, including details and supporting calculations, must be provided to the Department. Major changes must be submitted in writing with supporting documentation and approved in writing by the Department. No work shall be initiated until the approval by the Department or Board is received. Minor changes may be transmitted verbally and approved by the Department verbally provided that documentation of the change is provided to the Department within 10 days of the approval.

9. For new dam construction and for dams and reservoirs that have lowered the water level or have been drained to facilitate construction, the construction engineer shall file and obtain approval of a filling plan with the Department. The applicant/owner shall not proceed with the filling of the reservoir until it receives permission from the Department. The construction engineer shall provide documentation of monitoring during the filling operation.
10. Prior to the filling of the reservoir, the construction engineer shall submit one copy each of the approved Operations Manual and the approved Emergency Action Plan for the facility upon completion of the project as applicable.
11. The construction engineer shall give the Department at least ten days advanced notice of initial materials placement of the dam's foundation, in the cutoff trench, outlet backfill, outlet foundation, and any appurtenance requested by the Department in the approval of the plan for construction observation, to allow for observation by the Department.
12. Notice of substantial completion shall be issued by the construction engineer to the Department stating that the permitted improvements are functionally complete such that filling of the reservoir can be initiated with an approved filling plan.
13. The construction engineer shall give the Department fifteen (15) calendar days advance written notice prior to the project's final construction inspection. The construction engineer shall coordinate with the Department to conduct this inspection in the presence of the Department's dam safety personnel.
14. The construction engineer shall provide notice at least ten (10) days prior to initiating filling the reservoir, unless agreed at the final inspection.
15. If conditions are revealed which will not permit the construction, enlargement, repair, alteration, or removal of a safe dam or reservoir, the application for approval for construction, enlargement, repair, alteration, or removal shall be revoked.
16. A topographic survey of completed work including all monuments, inverts, crest alignment, spillways, and significant appurtenant features, when required by the Department shall be completed.
17. The applicant/owner shall utilize appropriate erosion control best management practice measures during construction to minimize turbidity (such as scheduling of work during period of low stream flow) and prevent debris and construction materials, including concrete, petroleum products, and other pollutants from enter the waters of the State. Construction related water and debris should be properly disposed of in a legal and environmentally safe manner and in accordance with the Department of Health and other Federal regulations.
18. The applicant/owner shall submit a copy of the dam safety application and the plans and specifications of the proposed improvements to the County Engineer of the County for which the dam resides for compliance with County codes.
19. Within fifteen (15) calendar days of completing the project, the applicant/owner or its representative shall provide the Department with a confirmation letter of compliance, signed and stamped by the construction engineer, indicating that the construction

was completed in accordance to approved plans and specifications including any field changes. The construction engineer shall submit the remaining construction completion documents which may include, but not be limited to, as-constructed drawing, final construction report, topographic survey, record of the location of permanent monuments, log of recorded water levels and other readings from the refilling operation, long-term instrumentation monitoring plan, and affidavit showing the actual cost of construction including engineering costs, within 60 calendar days of the submittal of the final construction inspection.

20. Construction completion documents and the construction engineer's certification shall be provided to the Department within 60 days of the final construction inspection. The Department will review the submitted items and furnish acceptance or denial within 60 days of receipt of satisfactorily completed construction completion documents and close out the dam safety permit.
21. This permit does not relieve the applicant/owner of their obligations to comply with all applicable Federal, State, and County regulations.